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ABSTRACT

Mental imagery, an internal representational process that enables an individual to experience an event in imagination, has been used effectively in treating psychological conditions, changing behavioral patterns, and altering physiological processes. Research on the psychological effects of imagery has focused on the influences imagery has on psychodynamic processes, self-concept and locus of control, and depression. Imagery has been used extensively in the behaviorally-oriented therapies and has proven to be a powerful intervention in treating various phobias and anxiety disorders, modifying habits, and improving motor skills. Imagery has been shown to be an effective adjunct in the medical field as well, particularly in the treatment of cancer and certain dermatological conditions. It appears that through their own mental activity, patients can have an important influence on the course of their disease and its treatment. Research has indicated that there are differences in how vividly people can image and that people who can image more vividly are better candidates for imagery therapies. Findings also suggest that it is valuable to match clients with certain characteristics to imagery techniques that specifically suit those characteristics. Guided imagery should be viewed as an adjunct to major treatment modalities which can assist in diagnoses, uncover unconscious issues, restructure thinking patterns, expand conscious experience, build internal resources, and guide certain biological processes. A three-page reference list concludes the paper. (NB)

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THE THERAPEUTIC USE OF MENTAL IMAGERY: A REVIEW OF RECENT EMPIRICAL LITERATURE

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Doctoral Research Paper
for the Degree of Doctor of Psychology

ROSEMEAD SCHOOL OF PSYCHOLOGY

BIOLA UNIVERSITY

STEVEN LEE GARMAN

1985

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A REVIEW OF RECENT EMPIRICAL LITERATURE

BY

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A doctoral research paper submitted to
Rosemead School of Psychology
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1985

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TABLE OF CONTENTS

	Page
Abstract	iv
Introduction	1
Psychological Influences of Imagery	4
Imagery and Psychodynamic Processes	4
Self-Concept and Locus of Control	8
Imagery and Depression	11
Behavioral Influences of Imagery	13
Imagery Procedures	14
Effectiveness of Imagery	17
Physiological Influences of Imagery	20
Imagery and Skin Conditions	22
Imagery and Cancer	24
Imagery and the Immune Response	26
Imagery and Other Physiological Phenomena	28
Conclusions	32
References	35

ABSTRACT

THE THERAPEUTIC USE OF MENTAL IMAGERY:
A REVIEW OF RECENT EMPIRICAL LITERATURE

BY

STEVEN LEE GARMAN

Recent empirical literature examining therapeutic applications of mental imagery is reviewed. Mental imagery has been effectively utilized to assist in a) diagnosing and treating psychological conditions, b) changing specific behavioral patterns, and c) altering physiological and medical processes. Imagery research has involved a wide variety of experimental procedures. This review attempts to examine what imagery is, how imagery techniqes have been applied, and how the various techniques compare to each other and to non-imagery techniques. Overall, imagery therapies have been shown to add a powerful therapeutic dimension to the helping professions.

The Therapeutic Use of Mental Imagery: A Review of Recent Empirical Literature

Recently there has been a resurgence of interest in mental imagery in both experimental and clinical psychology. This is evidenced by some of the recent publications bringing together researchers and clinicians from wide backgrounds in imagery studies (Sheikh, 1983; 1984; Singer & Pope, 1978). Imagery has a long history of application in the helping professions, but only in the past decade or so have scientists and clinicians seriously begun to study the effects of imagery on the healing process.

In general, the term "mental imagery," as used here, refers to an internal representational process that enables an individual to experience an event in imagination. A mental image can be similar to, but is much more than, a mental picture or movie. Often a single mental image will involve more than one sensory modality (e.g., visual, auditory, tactile), so that the individual will "feel" and "hear" the image as well as "see" the image. Several characteristics of imagery that are believed to make it a suitable modality for clinical work are summarized here (Sheikh & Jordan, 1983). Some conceive of imagery as representing the central core of perceptual, retrieval, and response mechanisms. Thus, images may be capable of representing situations or objects in place of the actual

situation or object. In the therapeutic setting words often arouse images, and these images are accompanied by a range of emotions. Imagery can help fill in details about specific occurrences in an individual's past or they may help to access preverbal memories.

In some therapies there are times when imagery helps to magnify the client's problem area or concern. As a result imagery may be useful for getting past the usual social discourse and moving directly into selective troubled areas in the client's life. Free imagery, which is analogous to free association, can therefore be useful to bypass stubborn resistances. Imagery is often accompanied by emotional responses and may give greater opportunity for emotional responses than does verbal language. Language is linear, and images tend to be more global and psychologically comprehensive, thereby providing access to a broader range of a person's experience. In this way images are useful for opening up areas of verbal blockage.

Imagery may span the conscious-unconscious continuum more readily than verbal communication. Words must be understood and formed grammatically before they are spoken, whereas ideas and responses often occur in images before they do in verbal cognition or behavior. Images may have the advantage of bypassing this filtering process. In addition, anecdotal evidence suggests that guided imagery can produce therapeutic consequences or insight without interpretation by the guide.

Imagery is fundamentally a psychological phenomenon. In

all imagery therapies it is the patient's subjective internal imagery experience that is addressed and manipulated. While imagery is always a psychological event, the therapeutic outcomes do not always have as their endpoint a psychological result. The reserarch reflects this by falling into three broad categories. The first category comprises areas of clinical research usually associated with psychological processes. A second group of studies has been inclined to explore how internal imagery affects external behaviors and habits. A third major grouping examines the effects that psychological events (namely, imagery) have on biological processes. The role of imagery in medical and physiological research has important clinical implications for our understanding about the mind-body relationship. As shall be demonstrated here, imagery has great potential to produce dramatic changes not only in psychological processes but in behavioral and physiological processes as well.

The nature of the research and the experimental procedures are quite varied and there is little consistency in procedure from one study to the next. This makes it difficult to summarize the overall results in a simple and concise manner. It is necessary to present some studies in more detail to point out the wide varieties in imagery procedures and experimental techniques. This paper shall examine the influences of imagery first at the psychological level, then at the behavioral level, and finally at physiological level.

Psychological Influences of Imagery

Imagery has been applied by clinicains to treat a wide variety of psychologicl conditions. However, the empirical literature has addresed only a few of these conditions. The experimental and quasi-experimental research revolves around the influences imagery has on a) psychodynamic or unconscious processes, b) self-concept and locus of control, and c) depression. The findings of some of the major research are considered here.

Imagery and Psychodynamic Processes

Some believe that imagery is the product of unconscious dynamics similar to dreaming (e.g., Reyher & Smeltzer, 1968). Images enable individuals to free themselves from the defenses or restrictions often found in verbal logic (Timlin, 1981). Gendlin (1970) suggests, "Images seem powerful in the formation of a specific feeling, but alone do not give an experiential shift. Words seem powerful in obtaining the release or experiential shift from a specific feeling" (p. 222). Gendlin is suggesting that images and words work together to unblock a feeling or experience. The image helps to put form to a specific feeling, which can then be connected with the word or words that best represent it.

Some have attempted to show experimentally that imagery is superior to verbal association at uncovering unconscious material. Reyher and Smeltzer (1968) conducted an experiment that intended to compare the amount of primary process

material produced by verbal free association with the amount produced by free imagery. They presented three different groups of words and phrases representing three common areas of conflict: sex, hostility, and family relationships.

When the experimenter gave the cue to "associate," the subject was to leave his eyes open and say the first thing that came to his mind following the stimulus word. When the experimenter said "image," the subject was to close his eyes and describe any images, feelings, or sensations that he experienced. The imagery responses produced heightened anxiety, more primary process, more direct representation of drives, and less effective defense as measured by the instruments used in this study.

A case study presented by Kuhlman (1982) lends further support to the ability of imagery to uncover psychodynamic or unconscious processes. The patient was rather defended, non-reflective, and not psychologically minded, and he wanted to be treated with systematic desensitization. While they were in the process of developing a hierarchy of anxiety provoking scenes, one particular scene tapped into a suppressed conflict the patient was having with his wife and parents-in-law. Even though he was not particularly interested in gaining insight, imagery uncovered a major conflict in his life.

Used in a different way, guided imagery was used to help a female adolescent gain control over certain obsessional fears and behaviors (Taylor, 1985). The girl was very

socially withdrawn and dependent on her parents. She described herself as having disturbing thoughts about her parents which she was unable to control. One uncontrollable fantasy she had was a homosexual relationship with her mother. Another one was a preoccupation with the thought of her father's face rotting away until he died. The girl had fears that the devil had taken control over her and that she would have to stop her thoughts by stabbing her parents and herself. Thus she was terrified of looking at knives or of going into the kitchen.

Taylor did not feel that she or the parents were very amenable to longer-term dynamic therapy, so he used a short-term-imagery approach. He exposed the girl to a hypnotic induction which involved relaxation and feelings of floating. He then proceeded into a guided imagery where she was to imagine a television screen with a garden scene on it. He instructed her to associate herself and her parents with the flowers in the picture. Then he split the screen into two halves. The image of a knife was on one half and the flowers were on the other half. He had her practice visualizing this scene until she could relax and describe herself as feeling in control of herself. At the end of the session he asked her to practice this scene on her own at home. In addition he was able to pursuade her to participate in a group therapy, but only for two sessions. At an eight month follow-up she was physically and socially active and less shy, and she was no longer bothered by the previous

obsessions.

Imagery has been used to treat psychopathological conditions, but it seems to be useful for enhancing creative processes in healthy individuals as well. Students in a career planning class were able to utilize imagery to help them unlock abilities at generating a greater number of career alternatives than usual (Sarnoff & Remer, 1982). Students participated in an imagery group or a control group. The imagery group was designed to encourage students to think in ways that have been associated with autonomy, control, and active involvement (these are some of the factors involved in one's ability to create solutions to a problem). The guided imagery proceeded thusly:

> ... subjects were first told to imagine themselves standing on the roof of the building, then gradually rising higher and higher in the air so that they could see first the surrounding area, then the entire city, the entire state, and finally the entire earth. This required control of imagery. They were then told to land anywhere they wanted in the world and find out what was going on there. This required autonomous imagery. During this exploration, they were encouraged to interact with the environment, to listen, to smell, to do things... (p. 303).

The students in the imagery group were able to generate more career alternatives than those in the control group. The precise reasons for these effects are unknown, but it seems reasonable to suggest that imagery that enlists a fuller range of an individual's cognitive and sensing functions will create greater access to internal resources.

Each of these cases seems to suggest that imagery has certain qualities about it that help to unblock unconscious

dynamics, whether they be emotions, precognitions, resistances, or dormant resources. "When the client is asked to describe only images, feelings, and sensations, he is deprived of cognitive processes and is thrown back upon more subjective media which are easily influenced by unconscious material and primary process" (Reyer & Smeltzer, 1968, p. 221). The effect is to minimize secondary process and filtering.

When the therapist creates the image and instructs the patient to experience the image, the effect might be gradually to build into the patient a new self image or bolstered identity, which in turn reorients the patient's self-perspective and perspective of the environment. (For a further discussion and illustration of rebuilding personal identity see Erickson, 1980, and Lankton and Lankton, 1983.)

Self Concept and Locus of Control

Others have done research to examine psychological changes and changes in one's self-attitude and self-concept. Cohen and Twemlow (1981) divided forty subjects into an imagery group and a control group. Both groups were told that they were in an experiment to study music and personality. They were told that they would be listening to various types of music during the sessions, and at the end they would be free to discuss their experiences. The imagery group received the same instructions but they were also exposed to relaxation and imagery. After the experimenter got the subjects started on the image he encouraged them to

let "whatever happens, happen."

Based on the personality measures used, the imagery group became significantly more inner directed, they became significantly more field independent, and they increased in their sensitivity and awareness to imagery, fantasy, and emotions. At four months follow-up, the imagery group scored as having moved significantly in the positive direction on measures of inner direction, self-regard, self-acceptance, acceptance of aggression, and in their view of human nature being more good than evil.

These results vary somewhat from the findings of other studies. Patrizi (1980) divided subjects into positive imagery or neutral imagery groups. The positive imagery group was asked to imagine themselves in ten different situations in which they performed behaviors reflecting predefined positive self-attributes. The neutral imagery group was asked to imagine ten different outdoor scenes. The positive imagery group gave higher ratings to the list of self-attributes than the neutral imagery group, but there was no significant difference in the extent to which they associated the attributes to themselves. Further, there were no significant differences between groups on self-concept and self-esteem.

Timlin (1981) compared a guided imagery group of delinquent adolescents with two control groups of delinquents. Each group met for six weekly sessions. The imagery group and the first control group were placed in a

comfortable room and given relaxation instructions. The second control group was not exposed to any experimental procedures. The imagery procedure began with the experimenter guiding the subjects through a nature scene. Then it was suggested that the subject might see something or someone. At this point the subject was left to continue the image independently for a few moments. The imagery group was able to modify its locus of control in an internal direction, but there was no shift in self-acceptance or self-esteem.

In each of these studies imagery was consistently able to assist in positively modifying locus of control. This finding seems reasonable insofar as imagery exercises demand a great deal of internal focusing. On the other hand the results on the effects imagery has on self-concept and self-esteem remain equivocal. It is difficult to account for the differences in outcome between these studies. Each study used different procedures and measures, and the types of images and the nature of the imagery is sometimes radically different between studies. It is important that future research deal with this by systematically examining the effects of different forms of imagery and measurement procedures.

The research in this section and in the previous section demonstrate to some degree that mental imagery has usefulness in guiding an individual to alter or access certain psychological dispositions or in uncovering unconscious issues. The following section considers the potential of

imagery to influence a different facet of psychological functioning, namely depressed mood.

Imagery and Depression

Four studies are considered here that tested the therapeutic effectiveness of guided imagery in the treatment of depression. While there are differences in the experimental procedures and imagery techniques, they are close enough to be considered together here.

Several different types of images were used. Some groups were exposed to aggressive scenes (e.g., "Imagine a time when someone said something that angered you"), some were exposed to socially gratifying scenes (e.g., "Imagine a time when someone said or did something to make you feel very pleased"), and some were exposed to free imagery (e.g., "Report all images, thoughts, fantasies, and ideas which occur to you without consciously trying to direct them") (Schultz, 1984). Other groups were exposed to imagery that was neutral in terms of affect and outcome (Jarvinen & Gold, 1981), while others were exposed to religious imagery (e.g., "I can visualize Christ going with me into that difficult situation in the future as I try to cope," Propst, 1980).

Each study contained one or more groups exposed to positive imagery. Two of the studies, however, varied the nature of the positive imagery. For instance Jarvinen and Gold (1981) exposed one group to positive imagery in which the subjects created their own positive images, and they exposed a different group to positive imagery that had been

preselected by the experimenter. The other variation on positive imagery included exposing religious subjects to either religious positive imagery or nonreligious positive imagery (Propst, 1980).

Several findings emerged. Directed imagery procedures produced lower levels of depression than free imagery, and socially directed imagery produced better results than less socially directed imagery (Schultz, 1984). However, while positive self-generated imagery fared as well as the other forms, positive directed imagery showed larger mean changes (Jarvinen & Gold, 1981). Thus directed imagery seemed to work better than self-directed imagery because it forced the imagery to be positive. In addition, certain types of depressives responded better to certain types of imagery. Depressives with themes of dependency responded better to aggressive imagery and socially gratifying imagery. Depression associated with self-criticism responded better to socially gratifying and positive imagery. Depressives whose daydreaming was positively oriented responded better to socially gratifying and positive imagery. Interestingly, depression associated with themes of guilty dysphoria showed more depression after positive imagery (Schultz, 1984). Wherever a control group was used, imagery groups showed significantly greater improvements, except in the Propst (1980) study. In her study, the nonreligious imagery group stayed about equal to the control group. The reason for this is not clear.

At this point it seems clear that guided imagery in general is effective in the treatment of depression. It cannot yet be asserted that one form is generally more effective than the others, but the research does indicate that certain forms of imagery may be more effective for certain types of clients. Unfortunately, at long term follow-up the improvements in depression seriously deteriorated. However, these findings are not surprising when one considers that the course of treatment was short-term and not individually tailored. It would be interesting to see what the long term outcomes would be if these problems were addressed.

Behavioral Influences of Imagery

The second major facet of imagery research has been in the behaviorally oriented therapies. Traditional behavioral interventions are not generally concerned with intrapsychic processes. Similarly there is a constituency of imagery researchers that have chosen to follow a similar approach to mental imagery. As a result most of the imagery work done by these researchers is consistent with a behavioral format, which is to focus primarily on behavioral outcome rather than on intrapsychic processes.

Imagery has been used extensively in the behaviorally oriented therapies to assist in desensitizing specific unwanted behaviors as well as to enhance other desired behaviors and dispositions. Guided imagery techniques have

been credited with treating several different types of phobias and anxieties (Wolpin, 1969; Saigh & Antoun, 1984; Kirsch, Frankel, & Valone, 1977), improving sexual functioning (Wolpin, 1969; Harris et al., 1980), insomnia (Woolfolk & McNulty, 1983), modifying smoking behavior (Straatmeyer, 1984), and improving motor skills (Ryan & Simons, 1982).

All of the authors of these studies refer to their technique under the generic term "guided imagery" or "imagery," but the specific method used by each one is different from the methods used by any of the others. In general, guided imagery refers to a process whereby one person (the guide) verbally directs another person through an imagined experience. The degree to which the guide structures the experience may vary, but essentially the guide sets up a scene and instructs the subject to "see," "feel," and "hear" himself or herself in the situation. Since there are such wide differences in how imagery is applied, it will be useful to examine first the variety of imagery techniques used in behavior research. Following that, the effectiveness of the various techniques will be summarized.

Imagery Procedures

One procedure involves instructing the subjects to do in imagination what they would like to do in actuality (Wolpin, 1969). In this procedure the therapist talks the patient through a scene step by step all the way through the desired behavior. The emphasis is on imagining overt motor behavior.

Little attention is given to what the subjects are feeling or what they should be feeling as they go through the visualization. Subsequent trials can be modified based on the patient's experience. For instance, if a particular part aroused an exceptionally strong reaction in the person, the scene can be modified to emphasize and elaborate that aspect.

The goal of another procedure (Straatmeyer, 1984) is to associate an aversive conditioned response (e.g., repulsion) with the undesired behavior (e.g., smoking) while at the same time associating a positive conditioned response (e.g., more energy and better health) when engaging in the desired behavior (e.g., turning down a cigarette). This method is similar to most in that the patient is verbally guided by the therapist through a scene step by step. But one important difference is that first a hypnotic state is induced in the patient. In this technique, much emphasis is placed on feelings. It is the intention of this technique to arouse very strong feelings and physiological responses in association with the image. Instead of simply guiding the patient through a scene which approximates the real life situation, images are alternately created which will first arouse strongly aversive reactions (e.g., feelings of repulsion and nausea), and then images are created that will enhance positive feelings in the person (e.g., imagine seeing yourself two years into the future as healthier and with much more energy and vitality).

There is yet a different procedure for desensitizing a

phobia which uses less structure (Kirsch, Frankel, & Valone, 1977). Instead of guiding the patient through a scene, as do Straatmeyer and Wolpin, snake phobia patients are instructed to guide themselves through a scene in which they imagine an encounter with the snake. Patients are asked to narrate the content of the scene to the therapist. If there is a pause in the narration, the therapist will simply encourage the patient to continue.

Still another procedure provides even less directiveness (Ryan and Simons, 1982). Here subjects merely use mental imagery as a means of mental rehearsal before practicing a motor skills task. The subjects are not given specific instructions or guidance about the content of the images, nor are they instructed on how to use the images except that they are encouraged to "see" and "feel" themselves at the task as vividly as possible.

The kinds of images used in other studies have no apparent relation to the task or to the desired behavioral outcome. In one desensitization study (Saigh and Antoun, 1984), subjects were simply asked to visualize images that reflected relaxing motifs. After the subjects had been taught the scenes, the therapist guided them through a process which paired the series of images with items from a test-anxiety hierarchy. In another study (Woolfolk and McNulty, 1983) one group of subjects was asked to focus their attention on an image without focusing on any somatic sensations. For instance, the therapist might ask the

patient to visualize the image of a candle. The therapist would guide the patient through a standardized detailed visualization of a burning candle. As the subjects became more proficient at imagining on their own, the therapist gradually removed himself from the role of a guide. In order to compare this pure imagery technique with imagery that is combined with muscle relaxation a second group of subjects was instructed to practice the same visualization exercises while proceeding through a standard muscle relaxation procedure.

Effectiveness of Imagery

One problem in summarizing studies of the effectiveness of imagery techniques is that imagery techniques generally vary widely from study to study. Each imagery technique used in behavioral treatment varies from the others in structure or degree. Some seem to vary only in the degree of therapist directiveness. Where mental rehearsal is involved, some focus more on emotions whereas others focus more on motor behavior. Then there are some that attempt to preclude focusing on somatic sensation and to focus purely on the mental image. Most of these studies compare imagery techniques with other traditional behavioral techniques.

Three of the studies are concerned with desensitization or relaxation (Saigh & Antoun, 1984; Kirsch, Frankel, & Valone, 1977; Woolfolk & McNulty, 1983). Two of these compared imagery techniques with systematic desensitization. Both studies found imagery and systematic desensitization to

be about equally effective. However, there were times when imagery subjects were able to complete the treatment at a faster rate than any of the desensitization subjects (Kirsch et al, 1977).

When compared to excercises designed to reduce muscle tension (i.e., progressive relaxation and somatic focusing), imagery was able to produce equally significant results in alleviating insomnia. Whether imagery was used alone or combined with muscle tension-release, the results were essentially the same. All of the treatment groups showed improvements over the control group in reducing the amount of time before falling to sleep and in reducing fatigue. At a six month follow-up the imagery groups had continued to improve beyond posttreatment measures whereas the other relaxation groups showed some deterioration (Woolfolk & McNulty, 1983).

Two other studies were conducted to demonstrate the ability of imagery to bring about desired performance. Ryan and Simons (1982) classified subjects into three types based on pretest questionnaires: those who typically use imagery in everyday life, those who do not use imagery, and those who occasionally use imagery. Then they divided these into six treatment groups. Those groups involved the following: "imagers asked to use imagery in mental rehearsal, imagers asked to try not to use imagery, nonimagers asked not to use imagery, nonimagers asked to try to use imagery, physical practice, or no practice" (p. 41). The "occasional imagers"

comprised the practice and no practice groups. Each member was then given a balancing task. Physical practice proved to be superior to imagery, and both were superior to no practice. Strong imagers performed better than weak imagers, and the use of imagery significantly improved performance regardless of whether the subject's usual style included imagery or not.

Straatmeyer (1984) combined positive and aversive imagery following hypnotic induction to recondition smoking behavior. After only two treatment sessions, 22.22% of his subjects continued to be totally abstinent from smoking at a nine month follow-up.

The studies reviewed here demonstrate rather convincingly that mental imagery can have a significant effect on changing behaviors. The imagery techniques used in these studies showed themselves to produce changes as well as systematic desensitization and other behaviorally oriented techniques, and in some cases imagery may be even more effective than the other methods. The behavioral research has not yet fully isolated what it is about imagery that makes it effective and under what circumstances, nor has the research clearly demonstrated that one imagery procedure is better than the others. The procedures used in the above research suggests that all may be effective in facilitating change.

While there is a lack of consistency in procedure, the research does point to some variables that influence the power of imagery. One of the main variables appears to be

how well a person can create images. "Good imagers" (those who image vividly) seem to gain greater therapeutic results than "poor imagers." While it cannot yet be asserted with great confidence that mixing imagery with other techniques (e.g., relaxation exercises or physical practice) is necessarily superior to imagery alone, it does appear that techniques that include imagery maintain longer term behavioral benefits than those that do not include it.

Physiological Influences of Imagery

It has already been stated that mental imagery is invariably an inwardly focused psychological event. Some researchers have explored the applications of imagery at that same level while others have explored the effects that this inner focus may have on outer expressions of behavior. There is yet another contingency of researchers and clinicians that have explored how this internal psychological experience may impact the phsyiological functioning of a person. The following is a consideration of the research where imagery has been applied to physiological and medical conditions.

Barber (1978; 1984) has provided an excellent review in which he summarizes the effects that "suggestion" can have on various somatic phenomena. He demonstrates how suggestion can alter skin reactions and influence glandular processes to interupt or change the naturally expected course of a somatic condition. Barber's review includes studies using hypnotic treatments, some of which utilize a great deal of imagery and

some which do not. Only the studies which overtly use imagery will be considered here.

But since hypnosis is used in most of these studies, it would be worthwhile to digress for a momment to examine the nature of hypnosis as it relates to imagery. Barber (1984) describes hypnosis "... as referring primarily to a situation in which individuals are purposefully guided by carefully chosen words and communications (suggestions) to 'let go' of extraneous concerns and to feel-remember-think-imagine-experience ideas or events that they are rarely asked to experience" (p. 69). In another place Barber (1979) quotes Milton Erickson as referring to "hypnotic trance" as "... a state of intensified attention and receptiveness and an increased responsiveness to an idea or to a set of ideas" (p. 257). A significant aspect of the "hypnotic state" is that it is a condition in which the subject is highly absorbed and focused on internal stimuli. This inner absorption disposes the subject to respond more fully and readily to internal cues and resources.

In the case of the imagery subject, an intensified inner focus on images would dispose the subject to assimilate cues from the imaging experience provided the subject is willing, motivated, and ready to "let go." Barber (1984) cites considerable research that suggests that an important characteristic of good hypnotic subjects is their profound ability to imagine and fantasize. It might be that the differences between the hypnotized subject and the imagery

subject are mostly differences of name rather than form. Suffice it to say here that it does not seem likely that the dynamics between imagery-plus-hypnosis and imagery-without-hypnosis are essentially different. Since a complete discussion of this issue is beyond the scope of this paper, the reader is referred to Barber's articles for a more indepth discussion.

Imagery and Skin Conditions

Barber (1978; 1984) reports on several case studies where subjects were exposed to suggestion and imagery which resulted in blister formation or signs proceeding the actual formation of blisters. But the following study is the only one reported that actually approaches a formal experimental investigation.

Forty student nurses volunteered to participate in an experiment which they knew was intended to attempt to produce blisters by suggestion. Each student nurse was exposed to a hypnotic induction procedure which involved suggestions of relaxation, drowsiness, and sleep. It was then suggested to her that it was morning and she was at her home and bacon was being cooked in a red hot frying pan. Then it was suggested, "...the red hot frying pan touches the back of your hand ... you can still feel the burning sensation ... soon a blister will form there ..."

Only one of the forty subjects experienced any changes in skin condition. The back of her hand became bright red and inflammed. The inflammation began appearing during the

suggestion and subsided within three minutes after completion of the suggestion. Interestingly, after the experiment she reported that she had been burned by hot grease on that very spot on the top of her hand six years previously.

Barber (1978; 1984) reports on an experiment using tactile imagery for the treatment of warts. Twenty-two sujects were randomly assigned to two groups. The first group was labeled a hypnotic group and the second group was labeled a "focused contemplation" group. The term "focused contemplation" was a term arbitrarily created by the experimenters and was previously unheard of by any of the subjects. In each condition, subjects were instructed to focus on certain warts and to imagine they were tingling, and to feel them going away. Then they were instructed to imagine for a few minutes each day the warts tingling and going away. Within six weeks three of the subjects in the hypnotic group showed dramatic remission in their warts. None of the subjects in the "focused contemplation" group experienced remission.

Barber points out that the subjects who showed wart cures believed strongly that hypnosis could cure warts. They also responded well to hypnotizability tests and were highly motivated to participate in the experiment. The subjects in the "focused contemplation" group had never heard of the term and did not particularly believe that it could cure warts. Barber suggests that it is the level of belief that the subject has in the procedure that has the greatest influence

on the outcome.

Imagery and suggestion have also been reported to be useful in treating four case studies involving a skin condition known as ichthyosis ("fish skin disease") (Barber, 1978). Ichthyosis is a condition in which the skin becomes "... black, horny, and covered with papillae. The skin is felt as hard as normal fingernail and, when cut, was of the consistency of cartilage and was anesthetic for a depth of several millimeters. Also, the skin was so inelastic that any attempt at bending would produce a crack in the surface which would then ooze blood-stained serum" (p. 17). In each case the subject was exposed to hypnosis. The degree to which imagery was employed in three of the cases is unclear, but in one the subject was instructed "... to visualize herself in a mirror and to see herself as she would like to appear, and told to watch for gradual improvement" (p. 18). In each case dramatic improvement was noted (25%-95%). Barber thinks that hypnosis functions primarily to make the suggestive treatment more acceptable and believable.

Imagery and Cancer

Empirical studies have been done to demonstrate the place imagery may have in the treatment of cancer patients. In particular imagery has assisted in the actual shrinking of tumors and in warding off harsh side effects of chemotherapy.

Hall (1984) reports on a comprehensive treatment approach to cancer which includes relaxation and imagery excercises along with medication and intensive psychotherapy to explore

the issues surrounding the cancer. The imagery dimension of the treatment proceeds something like this. First patients are instructed to relax all of their muscles. After they visualize being in a calm, pleasant place, they are instructed to clearly visualize the cancer and the radiation treatment. The radiation is visualized as millions of tiny bullets of energy bombarding all the cells of the body including the cancer cells. The cancer cells are seen as weaker and more confused than normal cells, and the normal cells are more capable of repairing themselves. Next the patient visualizes white blood cells carrying away the dead cancer cells through the kidneys and liver. Finally the patient pictures his body as healthy while the tumors are shrinking in size. In this procedure it is important that the cancer cells are seen as weak and confused while the treatment and normal cells are seen as strong and healthy and outnumbering the disease cells.

This procedure was tested with 159 patients diagnosed as medically incurable and given one year to live. Two years later, sixty-three of those patients were still alive. Of those, 22.2% demonstrated no evidence of cancer, 19.1% showed tumor regression, 27.1% had stabilized, and 31.8% showed some new tumor growth. Unfortunately, this study used no control group with which to compare the outcome.

Relaxation and imagery have been shown to be effective in significantly reducing some of the negative side effects of cancer treatment (Lyles, Burish, Krozely, & Oldham, 1982).

Fifty subjects were divided into one of three treatment groups. The first group was a relaxation-guided imagery group, the second group was one in which a therapist stood by in a supportive role with the patient during chemotherapy, and the third group was a control group in which the patient was permitted to rest quietly in a room before receiving chemotherapy. In the first group the therapist guided the patient through progressive muscle relaxation excercises before the medication nurse entered the treatment room. After these initial exercises had been completed the therapist moved into a guided imagery exercise. The images were calm, relaxing scenes which the patient had chosen earlier. Shortly after the therapist began the imagery portion, the nurse entered the room and administered the chemotherapy.

Compared to the other two groups, patients in the imagery group reported feeling significantly less anxious and nauseated during chemotherapy, and showed significantly less physiological arousal as measured by pulse rate and systolic blood pressure. Furthermore, they reported feeling less anxiety and depression following chemotherapy, and after going home, their nausea was less severe and less protracted.

Imagery and the Immune Response

Hall (1984) reports on a series of experiments that suggest imagery can influence aspects of the immune response. Hall and his associates conducted an experiment where they hypnotized twenty subjects with a relaxation induction.

During this time they were instructed to "imagine their white blood cells as 'strong,' 'powerful' sharks with teeth that attacked and destroyed 'weak,' 'confused' germ cells that caused colds and the flu" (p. 165). Then they were given instructions to practice this procedure twice each day for one week. Then another session was completed using the same technique. Blood was drawn from the subjects just prior to the procedure, one hour following the first session, and following the last session.

When the blood was analysed, the subjects seemed to fall into different groups. A median split at age fifty showed that only the younger group showed a significant increase in immune response over baseline measures at one hour and at one week. Furthermore, when the total sample was divided into high and low hypnotizables, only the high hypnotizables showed a significant increase over baseline in the first hour. On the one week measure their level was still higher than baseline but not significantly so. Thus it appears that those most suited to this imagery procedure were those under 50 and those who were more highly hypnotizable.

Other studies indicate that the type of changes noticed in certain immune system components may be influenced by the type of imagery. In one study (Smith, Schneider, & Whitcher, 1982, cited in Hall, 1984), "... subjects were asked to imagine their white blood cells (i.e., neutrophils) leaving the area of venepuncture, becoming 'sticky' and changing shape." Blood analysis revealed that there was a significant

drop in the number of neutrophils. However, there was a slight decrease in adherence and there was no significant change in shape. They postulated that the cells did not adhere because there were not enough present to have a reliable effect.

To test that hypothesis they conducted another study in which the subjects were instructed to imagine their neutrophils not leaving the area of venepuncture but becoming sticky and changing shape. Following this procedure the number of cells at the cite of venepuncture did not change significantly and there was a significant increase in adherence. Thus the imagery instructions, not just relaxation, appear to have an effect on the actual mechanisms of the immune system.

Imagery and Other Physiological Phenomena

Other researchers have demonstrated that imagery may be associated with heart rate and other autonomic responses. Some of the research suggests that imagery containing high motor activity will produce greater acceleration in heart rate, respiratory activity, and muscular activity. Cardiac activity is much more resistant to habituation during imagery than it is when motor tension without imagery is used or motor tension with imagery is used (Jones & Johnson, 1980).

In Pavlovian experiments involving heart rate conditioning, Arabian (1982) has shown that conditioning can be achieved by instructing the subject to imagine the unconditional stimulus. In another Pavlovian heart rate

experiment, Arabian and Furedy (1983) classified subjects as either good imagers or poor imagers. All subjects were treated the same in the conditioning experiment. It was observed that the conditional response was more similar to the unconditional response for good imagers than for poor imagers. Also, the conditional response for good imagers was maintained longer than it was for poor imagers.

Arabian and Furedy suggest that these findings may have implications for desensitization procedures involving imagery. Since good imagers may be able to sustain the conditioned response for a longer period, they may be able to obtain better results than poor imagers.

Barber (1978; 1984) reports on five controlled experiments involving suggestion and imagery which were able to enlarge breast size in women an average of 1 1/4 inches over a period of about 12 weeks. Hypnosis was utilized, which essentially taught the women to to relax deeply, and to experience profound feelings of calmness. They were taught to practice the techniques at home as well. The imagery went something like this:

> Imagine that the sun (or heat lamp) is shining on the breasts or that wet, warm towels are on the breasts and feel the heat as it flows through the breasts; imagine the breasts growing, as they did during puberty, and experience feelings of tenderness, swelling, and tightness of the skin over the breasts; and imagine that the breasts are becoming warm, tingling, pulsating, sensitive, and that they are growing. (Barber, 1984, p. 85).

Barber (1978; 1984) describes other studies that

demonstrate the use of imagery and suggestion in reducing blood flow during dental procedures, and altering the normal blood flow to differentially reduce and lower skin temperature.

Van der Hart (1985) presents two case studies in which imagery was used to alleviate functional amenorrhea. In each case he instructed the patient to go into a hypnotic trance and to allow her own unconscious to present her with an appropriate metaphor to solve her problem. It is unclear what Van der Hart means by hypnosis. He simply states that he asked the woman to go into a trance, after which she closed her eyes and "went into a trance." In both cases he prefaced the treatment by telling a story of another woman who had been helped by hypnosis to solve a similar problem.

In essence, the image that came to the mind of the first woman was this: she imagined that the bathroom in her house was being rebuilt. A man was doing the work, but when he wasn't there she did the work herself. She saw herself very carefully scrape away layer after layer from the walls, so that a new layer could be put on. She practiced the experience twice at home before the next session. On the fifth day following her first session she began her menstrual flow, and at seven months follow-up her periods had continued normally. The procedure for the second woman was similar although she produced a different image.

It might be that in each case, the woman was unconsciously blocking her regular menstrual flow. The

images that came to mind spontaneously gave her some sort of indication of what she needed to do to release the block.

In summary, some of the effects that imagery has on physiological processes might challenge conventional beliefs about the influence the mind can have on the body. Imagery is credited with influencing the progress of tumor growth, as well as the functioning of the immune system. Imgery appears to be able to influence autonomic responses which affect various organs and systems of the body. There seem to be at least two factors involved in these results. One is the degree of belief the subject has in the treatment, and the other has something to do with "hypnotizability." As already discussed briefly, hypnotizability is essentially involving the same processes that make a subject a good imager or poor imager. Whatever these terms actually mean, it appears that "good imagers" (or highly hypnotizables) benefit more readily from imagery techniques than "poor imagers."

At any rate, it seems clear that imagery can have a definite influence on physiological processes and in the management of disease progress. At its most grand level. imagery research on physiological proceses must cause us to reconsider the mind/body continuum. At the least it makes us realize that our state of bodily tension or relaxation can influence the function of certain body organs.

Conclusion

Imagery is an essential part of a person's makeup and experience. Therapists from a wide range of orientations have recognized the value of this dimension of personality and have utilized it a great deal in therapy as a tool for gaining information, diagnosis, and for transforming psychological, behavioral, and physiological aspects of the personality.

Even though the precise mechanisms are not yet fully understood, we know mental imagery has therapeutic applications for a variety of circumstances. Guided imagery has shown itself to be useful as an uncovering technique (e.g., Reyher & Smeltzer, 1968) and to produce positive outcomes in the treatment of psychological conditions ranging from depression (e.g., Schultz, 1984) to some of the more severe psychopathological conditions (e.g., Taylor, 1985). But the use of imagery is not limited to treating psychopathology. It clearly has applications for increasing personal awareness and stimulating insight (e.g., Sarnoff & Remer, 1982). Similarly, behavior therapists have discovered mental imagery to be a powerful intervention in the treatment of various phobias and anxiety disorders (e.g., Wolpin, 1969; Saigh & Antoun, 1984), and in modifying habits (Straatmeyer, 1984), and improving motor skills (Ryan & Simons, 1982).

Imagery has been shown to be an effective adjunct in the medical arena as well, particularly in the treatment of

cancer and certain dermatological conditions (e.g., Hall, 1984; Barber, 1984). The research on the relationship between imagination and physiology suggests that patients need not be passive observers of their own physical illnesses and treatment. Through their own mental activity they can have an important influence on the course of the disease and its treatment.

The research indicates that there are differences in how vividly people can image and that people who can image more vividly are better candidates for imagery therapies (e.g., Barber, 1984; Arabian & Furedy, 1983). Areas for future research might include training techniques for improving imagery abilities, in addition to continued study to determine which other client charateristics enhance responsiveness to imagery therapies.

Preliminary findings suggest that it is valuable to match clients with certain characteristics to imagery techniques that specifically suit those characteristics (e.g., religious clients might respond better to religious imagery) (Propst, 1980; Schultz, 1984). Another important area for future research would be to refine procedures to match clients with techniques.

It is probably better not to view guided imagery as a treatment modality in itself. It seems better to understand imagery as a potential adjunct to almost any major treatment modality. As the foregoing has shown, imagery can be used to assist in diagnosis, uncovering unconscious issues,

restructuring thinking patterns, expanding conscious experience, building internal resources, and guiding certain biological processes. The places where mental imagery can be applied is as broad as the clinician's creativity.

References

Arabian, J. M. (1982). Imagery and Pavlovian HR decelerative conditioning. Psychophysiology, 19, 286-293.

Arabian, J. M., & Furedy, J. J. (1983). Individual differences in imagery ability and Pavlovian heart rate decelerative conditioning. Psychophysiology, 20, 325-331.

Barber, T. X. (1978). Hypnosis, suggestions, and psychosomatic phenomena: A new look from the standpoint of recent experimental studies. The American Journal of Clinical Hypnosis, 21, 13-27.

Barber, T. X. (1979). Suggested ("hypnotic") behavior: The trance paradigm verses an alternative paradigm. In E. Fromm & R. E. Shor (Eds.), Hypnosis: Developments in research and new perspectives (pp. 217-271). New York: Aldine.

Barber, T. X. (1984). Changing "unchangeable" bodily proceses by (hypnotic) suggestons: A new look at hypnosis, cognitions, imagining, and the mind-body problem. In A. A. Sheikh (Ed.), Imagination and healing (pp. 69-127). Farmingdale, New York: Baywood.

Cohen, J., & Twemlow, S. W. (1981). Psychological changes associated with guided imagery: A controlled study. Psychotherapy: Theory, Research, and Practice, 18, 259-265.

Erickson, M. H. (1980). The February man: Facilitating new identity in hypnotherapy. In E. Rossi (Ed.), Innovative hypnotherapy: The collected papers of Milton H. Erickson on hypnosis (Vol. 4, pp. 525-542). New York: Irvington.

Gendlin, E. T. & Olsen, L. (1970). The use of imagery in experiencial focusing. Psychotherapy: Theory, Research, and Practice, 7, 221-223.

Hall, H. (1984). Imagery and cancer. In A. Sheikh (Ed.), Imagination and healing (pp. 159-169). Farmingdale, New York: Baywood.

Harris, R., Yulis, S., & Lacoste, D. (1980). Relationships among sexual arousability, imagery ability, and introversion-extraversion. Journal of Sex Research, 16, 72-86.

Jarvinen, P. J. & Gold, S. R. (1981). Imagery as an aid in reducing depression. Journal of Clinical Psychology, 37, 523-529.

Jones, G. E., & Johnson, J. J. (1980). Heart rate and somatic concomitants of mental imagery. Psychophysiology, 17, 339-347.

Kirsch, I., Frankel, A. S., & Valone, K. (1977). Self-guided imagery vs. systematic desensitization: A preliminary test. Psychological Reports, 40, 904-906.

Kuhlman, T. L. (1982). Symptom relief through insight during systematic desensitization: A case study. Psychotherapy: Theory, Research, and Practice, 19, 88-94.

Lankton, S. R., & Lankton, C. H. (1983). The answer within: A clinical framework of Ericksonian hypnotherapy. New York: Brunner/Mazel.

Lyles, J. N., Burish, T. G., Krozely, M. G., & Oldham, R. K. (1982). Efficacy of relaxation training and guided imagery in reducing the aversivenes of cancer chemotherapy. Journal of Consulting and Clinical Psychology, 50, 509-524.

Patrizi, F. M. (1980). Effects of mental imagery training upon self-attitude. Dissertation Abstracts International, 40 (12).

Propst, L. R. (1980). The comparative efficacy of religious and nonreligious imagery for the treatment of mild depression in religious individuals. Cognitive Therapy and Research, 4, 167-178.

Reher, J., & Smeltzer, W. (1968). Uncovering properties of visual imagery and verbal association: A comparative study. Journal of Abnormal Psychology, 73, 218-222.

Ryan, E. D., & Simons, J. (1982). Efficacy of mental imagery in enhancing mental rehearsal of motor skills. Journal of Sport Psychology, 4, 41-45.

Saigh, P. A., & Antoun, F. T. (1984). Endemic images and the desensitization process. Journal of School Psychology, 22, 177-183.

Sarnoff, D., & Remer, P. (1982). The effects of guided imagery on the generation of career alternatives. Journal of Vocational Behavior, 21, 299-308.

Sheikh, A. A. (Ed.). (1983). Imagery: Current theory, research, and application. New York: Wiley and Sons.

Sheikh, A. A. (Ed.). (1984). Imagination and healing. Farmingdale, New York: Baywood Publishing:

Sheikh, A. A., & Jordan, C. S. (1983). Clinical uses of mental imagery. In Sheikh, A. A. (Ed.), Imagery: Current theory, reserarch, and application (pp. 391-435). New York: Wiley and Sons.

Schultz, K. D. (1984). The use of imagery in alleviating depression. In A. Sheikh (Ed.), Imagination and healing (pp. 129-158). Farmingdale, New York: Baywood.

Singer, J. L., & Pope, K. S. (Eds.). (1978). The power of human imagination. New York: Plenum.

Strattmeyer, A. J. (1984). Hypnotic aversive and positive imagery in the cessation of smoking and the maintenance of nonsmoking behavior. Journal of Mental Imagery, 8, 57-66.

Taylor, R. E. (1985). Imagery for the treatment of obsessional behavior: A case study. American Journal of Clinical Hypnosis, 27, 175-179.

Timlin, M. G. (1982). The effect of guided imagery on the locus of control and self-esteem of delinquent adolescents. Unpublished dissertation. California Institute of Integral Studies.

Van Der Hart, O. (1985). Metaphoric hypnotic imagery in the treatment of functional amenorrhea. American Journal of Clinical Hypnosis, 27, 159-166.

Wolpin, M. (1969). Guided imagining to reduce avoidance behavior. Psychotherapy: Theory, Research, and Practice, 6, 122-124.

Woolfolk, R. L., & McNulty, T. F. (1983). Relaxation treatment for insomnia: A component analysis. Journal of Consulting and Clinical Psychology, 51, 495-503.